

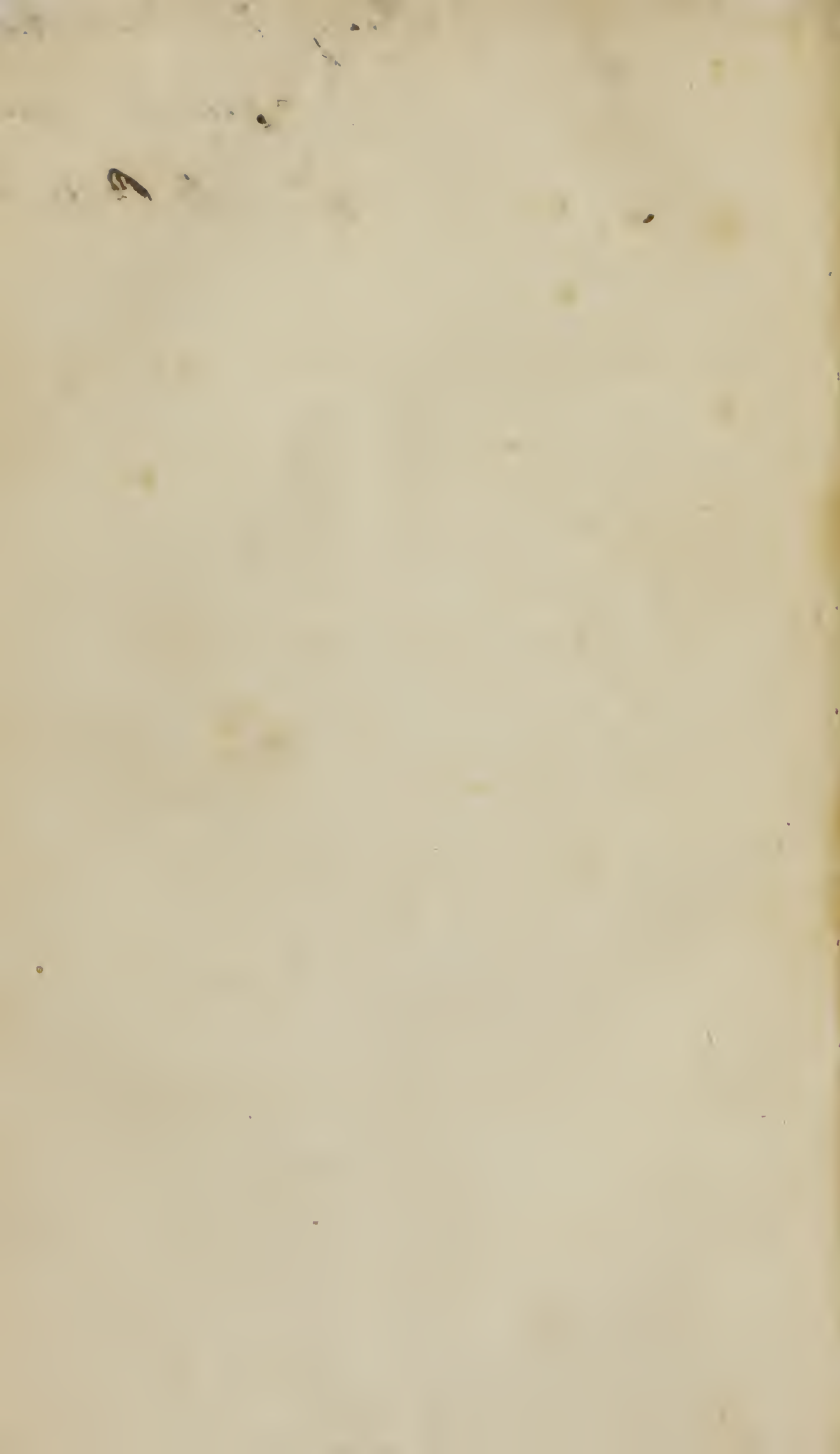
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AN  
Inaugural Dissertation  
ON THE  
MEDICAL PROPERTIES OF GOLD,  
WHICH UNDER THE AUTHORITY OF  
THE REVEREND  
JOHN H. LIVINGSTON, SS. T. P.  
PRESIDENT, AND THE TRUSTEES OF  
*Queen's College, in New-Jersey,*  
AND ALSO BY  
AN ORDINANCE OF THE FACULTY OF MEDICINE,  
IS SUBMITTED TO EXAMINATION FOR THE DEGREE OF  
DOCTOR OF PHYSIC.

By JOHN C. CHEESMAN,  
*LICENTIATE OF THE MEDICAL SOCIETY OF THE STATE OF  
NEW-YORK, AND VICE PRESIDENT OF THE  
PHILO MEDICAL SOCIETY.*

On the 28th of September, 1812.

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TO  
VALENTINE SEAMAN, M. D.  
CLINICAL LECTURER ON SURGERY, IN THE  
NEW-YORK HOSPITAL,  
AND ONE OF THE FACULTY OF MEDICINE OF  
QUEEN'S COLLEGE IN NEW-JERSEY.

THIS DISSERTATION  
IS MOST RESPECTFULLY DEDICATED,  
AS A TESTIMONY OF ESTEEM  
AND GRATITUDE  
FOR HIS EARLY INSTRUCTIONS  
IN MEDICINE; BY  
THE AUTHOR.





TO  
THE GOVERNORS OF THE NEW-  
YORK HOSPITAL.

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SEVERAL considerations influence me in addressing you on the present occasion. It enables me in the first place, to express the obligations which the community at large are under for the disinterestedness and philanthropy you evince, in bestowing so great a portion of your time and attention, in conducting the affairs of an establishment, in all respects calculated to afford relief and comfort to those of our unfortunate fellow-beings, who from disease and penury are led to apply for admission in the charitable institution over which you preside.

Secondly, as a member of the medical profession, I have an opportunity to acknowledge the high sense entertained of your liberal exertions towards promoting its interest, not only by opening your doors to the admission of students, and supporting

an extensive circulating library for their instruction, but also by the appointment of Clinical Teachers, more completely to effect the diffusion of Medical and Surgical knowledge.

Lastly, I hope to be indulged in expressing the feelings of respect and gratitude, which I retain for the favours extended towards me while officially engaged in the duties of the Hospital.

JOHN C. CHEESMAN.

## INTRODUCTION.



**B**EFORE entering into a detail of the medical, physical, and chemical virtues which gold possesses, it may not be improper to state, that however it may have been employed in other countries, it has not, as far as I am informed, been used as a medicine in the United States before the latter end of the year 1811, when it was first employed in the New-York Hospital.

To point out some claims which gold has to our attention as an article of the *Materia Medica*, and to show the grounds on which my confidence in its efficacy, as a remedy in certain diseases, depends; a number of cases which were carefully noted down by me while House Surgeon to the Hospital, are connected with this essay.



ON THE  
MEDICAL PROPERTIES  
OF THE  
MURIATE OF GOLD.

*WITH SOME PRELIMINARY OBSERVATIONS ON THE PHYSICAL  
AND CHEMICAL QUALITIES OF THAT METAL.*

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AS gold is frequently found in a pure metallic state, and as it has, by the common consent of mankind ever been held in high estimation, as the first of the precious metals, we may suppose some knowledge of it to have been coeval with the earliest progress of civilization.

ITS comparative worth is owing no doubt, in some degree, to its scarcity, particularly in respect to its use as a circulating medium of exchange. It is not however to its scarcity alone, but to its genuine and intrinsic superiority over most other substances, that its high value, even in this view, in a great degree depends.

GOLD, when pure, is of a bright yellow colour; verging on the one hand towards orange, and on the other towards brass yellow.

IN estimating or expressing the fineness or purity of gold, it is customary to suppose the mass to be divided into 24 equal parts ; which imaginary divisions are termed carats. If one part of the 24 be copper, lead or any other inferior metal, the gold is said to be 23 carats fine ; if there be 3 parts of base metal, the gold is 21 carats fine, which implies that  $\frac{3}{24}$  or  $\frac{1}{8}$  of the mixture consists of alloy.

THE specific gravity of gold is greater than that of any other known metal, except Platina. Lewis, from accurate experiments, states it to be about nineteen times heavier than water, and that a cubic inch of it weighs 4092 grains, or 10 ounces and 102 grains.

THE malleability of this metal exceeds all others.\* Magellan has calculated from the known weight of a number of leaves of a measured surface, that one grain covered a space of more than 56 square inches. In the gilding of silver wire, it admits of a much greater extension, so that a length of 294 feet is completely covered by a single grain.

ITS ductility is also so great as to be equalled by very few if any of the other metallic bodies.

THE brilliancy of gold is not destroyed or tarnished by the action of air or moisture, like most other metals. These physical and chemical qualities of

\* Murray's Chemistry.

gold, together with its scarcity, gives it great value both in commerce and in the arts.

THE quantity circulating in the form of coin is very much diminished by its superiority in many respects over the other metals. The quantity used in the fabrication of some useful and many ornamental articles, and its extensive use in gilding, makes a large draught upon the capital stock existing in the world. Although the extreme ductility of this metal admits of its being beaten out so thin, that 3 grains may be made to cover more than a square foot of surface, still the immense quantity of surface spread over in this way, must necessarily take up a very considerable portion, which coupled with the other modes in which it is abundantly lavished, leaves perhaps not half as much in the state of circulating coin as there otherwise would be. Hence its comparative valuation is vastly greater than it would have been, did its physical and chemical qualities not surpass those of silver, lead or copper.

GOLD is obtained in the greatest quantity from Siberia, Hungary, Mexico, and Transylvania. And according to some experiments made by Rouelle, Sage, and other chemists, it has been obtained from the ashes of vegetables. It will melt when exposed to the intense heat of a furnace, and may also be fused by a concentration of the solar rays, when collected in the focus of a powerful lens, as was proved by an

experiment of Macquer. Thompson states that its melting point is 32 degrees of Wedgewood's pyrometer, and that when fused, it assumes a bright bluish colour.

THERE is a number of modes by which gold may be separated from the different substances with which it is at times naturally united. Amalgamation with quicksilver, after it has been subjected to a process by which the earthy matter is taken from it is one of the most common. When gold is contained in ores, they are roasted to vaporize the more volatile parts, and to oxydize the other metals: the gold, Murray observes, may then be extracted by amalgamation, by cuppellation with lead, by the action of nitric acid; and other methods adapted to each ore, according to its constituent parts. These are the general modes used in commerce: it may be obtained perfectly pure, by dissolving any quantity in nitromuriatic acid, and adding to this a solution of the sulphate of iron, the oxygen will be attracted by the iron, and the gold precipitated in a metallic form.\*

VARIOUS have been the opinions of chemists,

\* It may be proper to state that in our experiments with the metal, the gold coin of the U. S. was used, which contains only two parts of alloy in the 24, which small proportion, it was presumed would have but little or no influence upon its operation.



more particularly those of former times, respecting the different solvents for gold; but it is now pretty fully established, that the proper solvent is a compound of two acids, the nitric and muriatic, generally used in the proportions of two parts of the former, to one of the latter. Berthollet has suggested the idea, that its solution is produced by the muriatic acid exerting a disposing affinity, thereby enabling the gold to decompose the nitric acid, and by that means to receive oxygen; the muriatic acid then unites with, and dissolves the oxyde thus formed.

IN this solution, when the compound acid has dissolved as great a portion of gold as it can do, it shews a rich yellow colour; when applied to the tongue, it corrodes and has a taste peculiar to itself. It communicates a purple colour to the animal membrane. When the skin is discoloured with it there is no getting rid of the stain, but by the removal of the cuticle. Chrystals of the muriate of gold are obtained by evaporation of a bright yellow colour, and have somewhat of a sparkling appearance. They are highly deliquescent, and are also readily dissolved in alcohol.

OF THE  
MEDICINAL PREPARATIONS  
OF GOLD.

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AS a few extracts made by the editors of the Medical Repository, from Dr. I. A. Chrestien's work, contain the particulars of all the different preparations he used in his practice, I shall here give an exact transcript from that valuable publication.

"DR. C. began his experiments by preparing an amalgam of gold with quicksilver. Having made a complete incorporation of these two metals, he evaporated the mercury by means of a lens, which left the gold behind in the form of a fine and subtile powder. This he administered to syphilitic patients, and was surprised at the salutary effects it wrought."

"ON other occasions he volatilized the mercury by a common fire, and not by the solar rays.

"HE sometimes also subjected his amalgam to the action of the nitric acid, and with the metal so comminuted and divided, he had the same success in practice. Apprehending, nevertheless, that some portion of the mercury might adhere to the gold, and that to such quantity of mercury, however small,

might be ascribed the cures, he determined to prepare an oxyd of gold, to be precipitated by potash from a solution in aqua regia. This produced also the like desirable effect."

"HE then prepared his golden oxyd by precipitating the metal by ammonia from its solution in nitro-muriatic acid. But on the operation of this he has not collected as yet a sufficient number of facts."

"The precipitate of gold obtained by means of tin was next employed. This, he persuaded himself, had more activity than the oxyd procured through the medium of potash. To this purple powder of Cassius he ascribes extraordinary powers as a medicine. And why indeed, should not gold have medical and even anti-syphilitic effects, as well as quicksilver?"

"The precipitate procured from the nitro-muriatic acid, by evaporation to dryness, could not be employed with safety, because it was deliquescent and extremely caustic."

"SUPPOSING then, that a muriate with two bases would present fewer inconveniences, he combined that of soda with the solution of gold, and obtained thereby the product he wished for."

"THIS he found preferable to any of the other preparations, and possessed of infinitely more energy. It is therefore more sparingly administered.

“THE dose of the divided or comminuted gold, was a quantity not exceeding three grains per day. But the muriate must be managed with much greater caution, and not be exhibited at the commencement to a greater amount than 1-15th of a grain. Although this possessed less causticity than that which had been prepared without the addition of sea-salt, it was still too caustic to be employed alone. For it left a bad impression on the tongue, and would have corroded it, to the injury of the part, without any benefit to the system at large.”

“THE author declares that he has for a long time employed all these preparations without giving his patients any other medicine whatsoever, that he might have indisputable evidence of their efficacy; and having become perfectly satisfied, he has now no apprehensions of using with them auxiliary means; though in venereal cases these are seldom necessary. So far from requiring collateral remedies to help them, he finds it necessary to calm and moderate the action of his muriate of gold, especially when prescribed for lues in irritable habits. This is accomplished by causing them to drink freely of whey.”

THE preparation of gold made use of in the cases to be hereafter mentioned, has usually been made in the New-York Hospital, by taking a certain weight of gold, and dissolving it in the nitro-muriatic acid, and evaporating the solution nearly to dryness; then

adding to the salt thus obtained an equal quantity by weight of the muriate of soda, re-dissolve the mixture in a small quantity of water, and again evaporate by a gentle heat in a sand bath as before : the residuum is the medicine here spoken of under the name of the Muriate of Gold.

It being a new remedy, we administered it with care, as was originally directed by Dr. Chrestien. The 15th part of a grain was given at a dose, and this by degrees increased until we became familiar with it, when the quantity was so enlarged, as finally in each pill to amount to 1.4 of a grain. The pills were made up with a proportion of powdered liquorice root, by means of the emulsion of gum arabic.

## MEDICAL USE

OF THE

## MURIATE OF GOLD.

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**T**HE diseases for which this medicine has been particularly prescribed, are those of Syphilis and other Lymphatic affections ; and it is for many reasons preferable to any that has heretofore been resorted to for the elimination from the system of that human

and destructive poison, which when remedies of a proper kind are not in time had recourse to, produces the most baneful effects upon the constitution, enervates the body, and not unfrequently induces premature death. Such then being its destructive nature, it becomes the duty of the guardians of the public health, when a new remedy is proposed, and more particularly when from a respectable source, to give it a fair and impartial trial, and if this is done, there can be no doubt, from the result of experiments already made, but that this remedy will be found a sure antidote to one at least, of the most distressing of human maladies, and consequently a most valuable addition to our list of medicines.

MY reasons for preferring this medicine to the mercurial preparations generally exhibited, are First, that mercury produces in certain idiosyncrasies, even when given in the smallest quantity, violent and injurious effects on the system.

SECONDLY, when mercury is administered for the cure of Syphilis, and given in quantities sufficiently large to eradicate the disease, before this salutary change is effected, the remedy too frequently, produces symptoms of debility and disorder which often require much time and labour to relieve. Ought we not then rather employ a remedy of equal efficacy, that is free from such deleterious consequences?



Thirdly, To how many who are so unfortunate as to contract this disease, is it of the greatest consequence that it should be kept profoundly secret. This cannot with certainty be done if mercury is exhibited for its cure, there being no sure means of preventing salivation, let the Physician be ever so guarded in its administration. This occurrence is generally sufficient to cause suspicion, if not to disclose the nature of the disease, and must of course be a powerful objection to mercury: particularly as a substitute offers, which I am happy to say is not attended with any such unpleasant effects.

FOURTHLY, Dr. Mathias in his valuable work on the Mercurial Disease, deprecates in the most forcible terms the effects of mercury on the human system. He states that a disease very nearly resembling the venereal is produced; and that many practitioners by not attending to the peculiar discriminating marks, often conclude that the primary one still exists, persist in the use of the remedy, and as constantly injure their patients.

WE know not that the use of gold is ever followed by any ill consequences.

It would be useless for me to suggest any thing respecting the *modus operandi* of this medicine; all persons possessing a knowledge of the healing art, must readily admit, such disquisitions to be involved

in great obscurity ; and I trust will prefer a candid statement of facts, to reasoning which must necessarily have for its basis only hypothesis and conjecture.

FROM his close attention to the progress of medical science, and his early intelligence of improvements abroad, Dr. Mitchill soon became acquainted with this discovery of a new remedy for syphilis, in France; having obtained a copy of Chrestien's book, he lost no time in making known to his medical brethren of the Hospital, the important account it gave of the efficacy of the preparations of gold in that disease. Notwithstanding former disappointments in the employment of new anti-syphilitic remedies, which had been published under the highest recommendations, still it was determined to give a fair trial to this ; it was of importance to ascertain whether it did, or did not possess the virtues attributed to it : If opium and nitric acid did not support the character given of them, the experiments made in this Hospital, were useful in establishing the truth of their being unworthy of our confidence. Disappointment in the effects of these remedies, tended but to increase scepticism in respect to the one now proposed ; every precaution was accordingly taken. Having carefully made that preparation of the metal which appeared to promise the best effect ; a number of cases from among those which presented, wherein the patients had not previously taken any medicine for its relief, were select-



ed for the purpose. The following are from among those which occurred in the surgical department of the house ; and lest the remarkable success observable therein, should make any one suspect that my reports have been influenced in any degree by undue partiality for a new practice, I may just observe, that the circumstances under which the cases were taken, must do away every suspicion of that kind: they were generally under the superintending care of Dr. Seaman, during his clinical attendance at the Hospital ; they were noted down under his scrutinizing observation, and the after reports publicly dictated in the presence of a numerous class of students, then walking the wards.

### CASE 1st.

W. F. born in New York, aged 18 years, was admitted in the N. Y. Hospital on the 25th of October, 1811, with chancres on the prepuce, and one on the pubes ; which made their first appearance about two months ago. He had taken no medicine for them. He was directed to keep the ulcers clean, and dress them with simple ointment spread on lint, and to take a pill containing the 15th of a grain of the muriate of gold morning and evening.

Novr. 1st. The plan prescribed has been regularly pursued without producing any uneasiness in the stomach or bowels, but with an evident good ef-

fect on the chancres, that on the pubes being healed, the others getting better.

Novr. 5th. Still continues mending.

Let him take three pills a day.

Novr. 8th. The penis having been swollen, a poultice was applied which has diminished the swelling very much : chancres are improving.

Continue the medicines.

Novr. 14th. Continues still to mend.

Novr. 23d. Ulcers are all healed.

To insure success let the pills be continued two weeks.

Novr. 30th. Having been attacked with a slight affection of his throat, a gargle was used ; and the volatile liniment directed to be applied to it.

Continue the pills and the other remedies.

Decr. 6th. The disease of his throat is removed, and he is to appearance in perfect health.

Discharged cured.

### CASE 2d.

T. C. Born in Ireland, aged 23 years, was received in the N. Y. Hospital on the 22d of October, 1811, with two chancres on the prepuce, and a very large one on the pubes. He has been affected about six weeks, and has taken no medicine for it.

Let him take a pill of the 1-15th of a grain of the muriate of gold in the morning for three days, and then one morning and evening.

Novr. 5th. The pills produce no perceptible effect on the stomach or bowels, or any of the excretions. Chancres on the prepuce healed, that on the pubes mending.

The granulations being exuberant, let them be occasionally touched with lunar caustic, and dressed with lint spread with the common ointment.

Let him take three pills in a day.

Novr. 8th. Continue the medicines. Cleanliness to be particularly observed, and the caustic frequently applied.

Novr. 14th. Complains of pain in his side, which is increased on coughing, or taking a full inspiration. Pulse a little accelerated but regular; skin moist; tongue white.

Let him take of the cathartic solution a tablespoonful every hour, till it operates, and drink freely of bran tea; apply a blister to the part affected. Continue the pills as before.

Novr. 23d. Affection of his side quite relieved. Continue the pills.

Novr. 30th. Ulcer healing rapidly. Continue his medicine.

Dec. 7th. Discharged cured.

### CASE 3d.

M. R. aged 38 years, seaman, was admitted in the N. Y. Hospital Novr. 1st, 1811, having four chan-

cles on the prepuce, with considerable tumefaction of the part. He has not taken any medicine for this disease; nor has he been affected with a complaint of this kind for seven years before.

Let him take two pills a day of the muriate of gold, keep the parts clean, and apply a poultice to the penis.

Novr. 5th. Chancres are healing.

Continue the medicines.

Novr. 8th. Mending gradually. Stomach and bowels not affected by the pills. Urine evacuated in larger quantity than usual.

Continue the remedies.

Novr. 14th. Chancres appear to have been stationary since last report.

Let him take three pills a day.

Novr. 23d. Chancres are healing, the discharge of urine nearly one third more than natural.

Novr. 30th. Ulcers nearly healed.

Let the remedies be continued.

Dec. 7th. Ulcers healed.

Let him continue the pills a few days longer.

Dec. 12th. Discharged cured.

#### CASE 4th.

M. S. aged 19 years, admitted November 1st 1811, has a large chancre on the left Labia Pudendi, with which she has been affected 17 days, and has taken no medicine.

Let her keep the diseased part perfectly clean with soap and water, and apply to it the simple ointment spread on lint, and give her morning and evening a pill containing the 1-15th part of a grain of the muriate of gold.

Novr. 5th getting better.

Novr. 8th. Chancre rapidly healing.

Continue remedies.

Novr. 16th. Ulcer healed.

Continue the medicines for a few days.

Novr. 19th. Discharged cured.

#### CASE 5th.

T. C. born in Ireland, aged 30 years, labourer, was admitted in the N. Y. Hospital November 5th 1811, with a large chancre on the prepuce, and an ulcerated bubo; both putting on a gangrenous appearance. He has had the disease only twelve days; it having progressed with great rapidity. He says that he has not taken any medicine for it.

There was immediately directed a yeast poultice to both ulcers, with particular directions to have the diseased parts washed perfectly clean with soap and water, whenever the cataplasm was renewed. He has administered to him morning and evening, a pill of the muriate of gold, each containing the 1-4th of a grain.

Novr. 12th. Has continued the treatment as directed, and the ulcers look much cleaner.

Repeat his pills.



Novr. 15th. No perceptible alteration.

Continue the medicines.

Novr. 23d. The ulcer on the penis mending, that in his groin somewhat better. No particular effect on any of the excretions.

Continue the treatment as before directed.

Novr. 30th. Appearance of the ulcers much better.

Decr. 7th. Ulcer on his penis cured; that in the groin getting better.

Let the pills be increased to four a day.

Decr. 17th. Cicatrization progresses.

Decr. 21st. Ulcer still continues improving.

Let the pills be continued.

Decr. 28th. Discharged cured.

### CASE 6th.

T. M. born in Kingston, aged 25 years, seaman, was received in the N. Y. Hospital on the 5th of Novr. 1811, having two large chancres on the prepuce, and two on the glans penis, with which he had been affected about three weeks, and had taken no medicine for their relief. He had never been affected with syphilis before.

Upon being received he was directed to take the fourth of a grain of the muriate of gold night and morning, and to apply a poultice of yeast and Indian meal to the penis, until the chancres should be cleansed, and the inflammation relieved.

Novr. 8th. Chancres look much cleaner than at first, and the swelling has almost subsided; he has

an enlargement of one of the glands of the groin. Apply an epispastic to the bubo and continue his medicines.

Novr. 14th. The ulcers are rapidly healing. Thinks the quantity of urine is increased about one third; the other excretions are not affected.

Continue the medicines.

Novr. 28th. Ulcers healed.

Let the remedies be continued for a few days.

Novr. 29th. Discharged cured.

### CASE 7th.

P. N. Born in Ireland, aged 64 years, labourer, was admitted in the N. Y. Hospital on the 9th of January 1812, with syphilis, consisting of two large chancres on the dorsum of the penis, which have existed two weeks. He has not taken any medicine for the complaint.

Let the ulcers be frequently washed with soap suds, and dressed with the common ointment. He was directed to take four pills of the muriate of gold in the twenty-four hours, each containing the fourth of a grain.

Jan. 11th. No perceptible alteration.

Let the pills be increased to six a day.

Jan. 16th. Chancres appear better.

Continue the pills.

Jan. 22d. Ulcers are contracting rapidly.

The same treatment to be continued.

Jan. 29th. Chancres continue to improve.

Continue the medicines with the usual dressings.

Feb. 7th. The ulcers have been healed for three days past.

Discharged cured.

Some trials of the muriate of gold have been made in cases of Scrophula: the result not being altogether satisfactory, I forbear venturing an opinion as to its efficacy in that complaint.

Many more cases might be adduced equally confirmatory of the curative action of our remedy in syphilis; but as they are very similar to those above particularized, it was thought hardly necessary to publish them; such a monotonous repetition of facts it was feared would tend more to fatigue the reader, than to convince his judgment.

From the result of these experiments, corresponding, as far as I can learn, with the experience of a number of our most distinguished practitioners, I trust we may safely conclude with Dr. Seaman,\* that by its means “We have “indeed” seen mercury dis-  
“robed of half its honours, of its proud pre-eminence  
“as the *only* remedy in syphilis; having now ample  
“proof of the equal power of gold over that most  
“dreadful disease.”

(\* M. S. Concluding Lect. Clin. Surg.)

FINIS.









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